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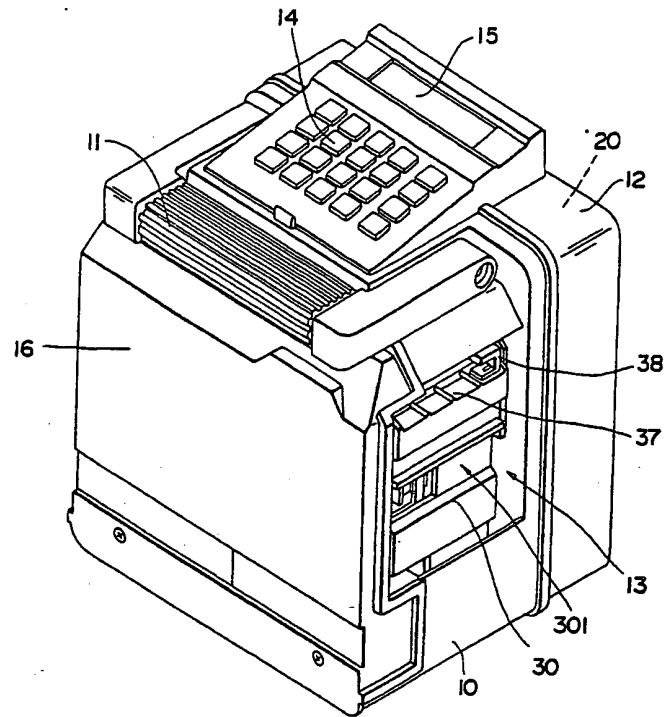
(54) **Desk top label printer.**

(57) A desk top label printer comprising a casing provided with a laterally openable cover 16 and having a tape holder 18 for holding a roll of label tape in an internal cavity of the casing, a thermal printing head unit 50 provided inside said casing 10 and having a thermal printing head 51, a tape depressing mechanism 30 which is arranged to oppose said thermal printing head unit 50 and has a platen roller 34 which comes in contact under pressure with said thermal printing head 51 as required, a driving means 73 which feeds a label tape inserted between said thermal printing head 51 and said platen roller,

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an electric circuit 20 which drives and controls said thermal printing head 51 and said driving means 74, and an input means for entering data to be printed by said thermal printing head unit 50 via said electric circuit, characterised in that the thermal printing head unit 50 is carried by a shaft 54 having one end supported by an internal wall of the casing and a free end extending toward said openable cover 16, said tape depressing mechanism 30 being provided with a support frame 32 pivotally carried by a fixed shaft 31 which extends in parallel with the shaft 54 of said thermal printing head unit 50 and which also

has one end supported by an internal wall of the casing 10 and a free end, the platen roller 34 being carried by a displaceable part of the support frame 32, and said thermal printing head unit 50 and said tape depressing mechanism 30 are respectively provided with engaging means 33, 33', 55 and 55' for selectively interengaging said tape depressing mechanism 30 with the shaft 54 of said thermal printing head unit 50 in operation of the printer, wherein a space for laterally inserting said label tape, which space is open towards said cover, is defined between said thermal printing head 51 and said platen roller 34 by displacing said tape depressing mechanism 30 away from said thermal printing head unit 50, and wherein the tape depressing mechanism 30 is engaged with and fixed with respect to the support shaft 54 of said thermal printing head unit 50 by said engaging means when said platen roller 34 depresses a label against said thermal printing head 51 in use.

FIG. 1



### Desk Top Label Printer

The present invention relates to a desk top label printer.

Conventional label printers of this type are adapted to accommodate a label tape, which is made up by adhering a number of labels onto a carrier strip in a row and winding it in the shape of roll. The label tape is then arranged below a printing head which prints required information onto each of the labels in sequence.

Most types of such label printer employ an electronic thermal printing head such as, for example, a thermographic printing head or the like to print a bar code on each label.

In label printers employing such an electronic thermal printing head, the thermal printing head and a label depressing mechanism for making the label contact the thermal printing head are each firmly supported at both of their ends to make each label accurately contact the thermal printing head, and are located inside a casing.

With conventional label printers constructed as described above, it is necessary when loading the label tape on the label printer to mount a roll of label tape on a tape holder, extend the label tape from the roll and pass it through a tape guide inside the label printer in the length-wise direction of the tape and there has been a problem that positioning of the label tape in this way is troublesome.

Viewed from one aspect the invention provides a desk top label printer comprising a casing provided with a laterally openable cover and having a tape holder for holding a roll of label tape in an internal cavity of the casing,

a thermal printing head unit provided inside said casing and having a thermal printing head,

a tape depressing mechanism which is arranged to oppose said thermal printing head unit and has a platen roller which comes in contact under pressure with said thermal printing head as required,

a driving means which feeds a label tape inserted between said thermal printing head and said platen roller,

an electric circuit which drives and controls said thermal printing head and said driving means, and an input means for entering data to be printed by said thermal printing head unit via said electric circuit, characterised in that the thermal printing head unit is carried by a shaft having one end supported by an internal wall of the casing and a free end extending toward said openable cover, said tape depressing mechanism being provided with a support frame pivotally carried by a fixed shaft which extends in parallel with the shaft of said thermal printing head unit and which also has one

end supported by an internal wall of the casing and a free end, the platen roller being carried by a displaceable part of the support frame and said thermal printing head unit and said tape depressing mechanism are respectively provided with engaging means for selectively interengaging said tape depressing mechanism with the shaft of said thermal printing head unit in operation of the printer, wherein a space for laterally inserting said label tape, which space is open towards said cover, is defined between said thermal printing head and said platen roller by displacing said tape depressing mechanism away from said thermal printing head unit, and wherein the tape depressing mechanism is engaged with and fixed with respect to the support shaft of said thermal printing head unit by said engaging means when said platen roller depresses a label against said thermal printing head in use.

In a preferred embodiment, the engaging means comprises a pair of engaging parts provided on the shaft of said thermal printing head which are respectively positioned on both sides of said thermal printing head, and a pair of complementary engaging cutaway parts provided on the support frame of said tape depressing mechanism which respectively oppose said engaging parts, each of said engaging parts being formed to have a cross-section substantially of a partly flattened circle and said engaging cutaway parts are each formed with a recess which is open at a side facing said engaging parts and a rounded hole which is enlarged with respect to the recess, the width of said recess being greater than the flattened thickness of the engaging parts, and the diameter of said rounded hole being substantially the same as the maximum diameter of said engaging parts, wherein each of said engaging parts can be simultaneously turned in the rounded holes of said engaging cutaway parts by a knob provided on said shaft to allow operation from outside the casing.

Thus, in accordance with the present invention as described above, when the tape depressing mechanism is retracted from the thermal printing head unit, an open space is defined between the thermal printing head unit and the tape depressing mechanism and the label tape can be inserted into said space from the lateral side.

In the preferred embodiment, when the engaging cutaway parts of the tape depressing mechanism approach the engaging parts of the shaft by pivoting the tape depressing mechanism toward the thermal printing head unit, said engaging parts can be accommodated into the recesses of the engaging cutaway parts with the engaging parts

orientated edge on.

When the support frame of the tape depressing mechanism is further displaced toward the thermal printing head unit, the platen roller serves to depress the label tape onto the thermal printing head.

In this position, the engaging parts of the shaft engage in the rounded holes of the engaging cutaway parts to allow the shaft to be rotated so that the engaging parts are uprightly positioned to prevent removal via the narrower recesses.

The engaging parts preferably a maximum diameter as large as two times the flattened thickness and can therefore be closely fitted into the rounded hole by rotation into an upright position. Thus the tape depressing mechanism is firmly fixed to the shaft.

An embodiment of the invention will now be described, by way of example, only, with reference to the drawings, in which:

Figure 1 is a perspective view of a label printer in accordance with the present invention;

Figure 2 is a partly cutaway perspective view showing the interior of said label printer;

Figures 3 and 4 are side views showing the interior of said label printer in which Figure 3 shows the condition of the tape depressing mechanism when separated and Figure 4 shows the condition of the tape depressing mechanism when engaged;

Figure 5 is a partly cutaway side view showing the interior of said label printer in which the cassette is accommodated;

Figure 6 is a side view showing the driving system of the label printer;

Figure 7 is a schematic illustration showing the engaging condition of the engaging parts of said label printer;

Figure 8 is a schematic illustration showing the operating condition of said label printer; and

Figure 9 is a schematic illustration showing the feeding of the label tape during the label adhering operation of said label printer.

In the accompanying figures, numeral 10 is the casing, 30 is the tape depressing mechanism, 31 is the fixed shaft, 32 is the support frame, 321, 321' is the frame plate, 33, 33' is the engaging cutaway part, 331 is the recess, 332 is the circular hole, 34 is the platen roller, 35 is the feed roller, 36 is the turnback pin, 37 is the tape receiving member, 38 is the sensor, 39 is the stopper, 302 is the sensor, 40 is the cassette, 41 is the carbon ribbon, 50 is the thermal printing head unit, 51 is the thermal printing head, 52 is the base member, 53 is the pushing spring, 54 is the shaft, 55, 55' is the engaging part, 60 is the label tape, 61 is the carrier strip, 62 is the label, 70 is the driving system, t is the thickness of the engaging part, and U is the diameter of the engaging part.

The label printer according to the preferred embodiment is made to be portable, as shown in Figure 1, by providing a handle 11 on the casing 10.

In the casing 10, an electric circuit part 12 incorporating an electric circuit 20 and a printing part for feeding the label tape and printing labels are separately provided, and a ten key board 14 for entering data into the electric circuit, and a display unit 15 for displaying the input data, are provided on the external surface of said casing 10.

An openable cover 16 is attached to the side of the printing part 13, which can be seen by opening said openable cover 16.

The tape depressing mechanism 30 is provided on the front face, that is, the surface at right angles to said openable cover 16, of said casing 10 and is located adjacent an opening formed on the front face of the casing 10.

In the casing 10, as shown in Figure 2, an electric power supply 21 for operating said electric circuit 20, a ROM card 22 and a RAM card 23, which are replaceably set to operate the microprocessor of the electric circuit 20, are accommodated, and a space 17 for storing the cassette 40 and the tape holder 18 for holding a roll of label tape is provided.

As shown in Figure 2, said tape depressing mechanism 30 has a support frame 32 which is mounted on one side to the internal wall of the casing 10 on a fixed shaft 31 and is pivotal forwardly and rearwardly on such mounting. The support frame 32 is provided with a pair of frame plates 321 and 321' which are arranged in parallel to orthogonally intersect the axial line of the fixed shaft 31.

The frame plates 321 and 321' are respectively provided with engaging cutaway parts 33 and 33', which are each defined, as shown in Figure 3, by a recess 331 which is forwardly open and a circular hole 332 which is provided at the inner side of said recess 331.

As shown in Figures 3 and 5, a platen roller 34, a feed roller 35 which relocatably contacts under pressure said platen roller 34, a turnback pin 36 which is positioned above the platen roller 34 and feed roller 35, and a label receiving member 37 located outside the feed roller 35 are provided between said frame plates 321 and 321', and a label sensor 38 is provided at an end of said label receiving member 37.

A thermal printing head unit 50 is arranged inside the casing 10 to oppose the tape depressing mechanism 30 and is provided with a thermal printing head 52 such as, for example, a thermographic printing head, together with a base member 52 for supporting the thermal printing head 51, a spring 53 for urging the thermal printing head 51 down-

wardly with respect to the base member 52, and a shaft 54 which supports the base member 52.

The shaft 54 is fixed at one end to the internal wall of the casing 10 whilst its other end extends as a free end. Accordingly, the shaft 54 is located in parallel to said support frame 32, and the free end of the support frame 32 is opposed to the free end of the shaft 54.

A pair of engaging parts 55 and 55' are provided on both end portions of the shaft 54 to oppose the pair of engaging cutaway parts 33 and 33' provided on the support frame 32, the engaging parts 55 and 55' each being formed as a shaft which has a partially circular cross-section, for example, a semi-circular shape by partly flattening the shaft 54. The engaging part 55 (55'), as shown in Figure 7A, is formed to have thickness  $t$  slightly smaller than the opening width  $W$  of the recess 331 of the engaging cutaway part 33 (33') and, accordingly, as shown in Figure 7B, the engaging part 55 (55') may be smoothly inserted into the recess 331 of the engaging cutaway part 33 (33') if said engaging part is appropriately orientated.

The engaging part 55 (55') can then be rotated after having been accommodated in the circular hole 332 of the engaging cutaway part 33 (33') as shown in Figure 7C. If the engaging part is rotated as described above, it is engaged with the entrance of the circular hole 332 by the flattened surface 551 and the support frame 32 is thus firmly fixed to the shaft 54. Since the thermal printing head 51 is urged by the platen roller 34 against the depression spring 53, the flattened surface 551 of the engaging part 55 (55') is depressed onto the circular hole 332 with a specified depressing force.

For turning the engaging parts 55 and 55', a knob 56 is provided on the free end of the shaft 54 and can be turned to a position where it contacts a stopper 39 on the support frame 32 as shown in Figure 4. At this position, the flattened surface 551 of the engaging part 55 (55') is arranged to engage with the entrance of the circular hole 332.

This engaging operation is enabled by the shape of engaging parts 55 and 55' and the shape of the engaging cutaway parts 33 and 33'. The engaging part 55 (55') is set to be formed in the shape of a true circle which is partly cut away i.e. flattened so that the thickness  $t$  of the part with the cutaway surface is shorter than the diameter  $d$  of the true circle, and the engaging cutaway part 33 (33') is set so that the width  $W$  of the recess 331 is larger than the thickness  $t$  of the engaging part and an expanded circular hole which has substantially the same diameter as the diameter  $d$  of the true circle is provided in the inner part of the recess 331 to allow the engaging part 55 to retainingly engage in the circular hole 332 by rotating the engaging part 55 in the circular hole 332. Since the

engaging part 55 (55') is simply made up by partly flattening the shaft 54, the diameter  $d$  of the true circle is the same as the diameter of the shaft 54 but, depending on the rotational orientation, a part having an effective diameter differing from that of the shaft 54 is provided on the shaft 54 as the engaging part.

The cutaway surface 551 may be engaged with the entrance of the circular hole 332, as shown in the drawings, if the engaging part 55 (55') is formed to have a semi-circular shaped section and the external periphery of the engaging part 55 engages with the entrance of the circular hole 332 if the thickness  $t$  of the engaging parts is similar to the diameter  $d$  of a circle.

A cassette 40 is remountably secured, as shown in Figure 2, in the storing space 17 in said casing 10.

This cassette 40 contains a thermal transfer type carbon ribbon 41 permitting printing on common paper label, whereas, if the cassette 40 is not used, thermosensing paper labels are used.

Figures 3 and 4 show the label printer in accordance with the preferred embodiment when thermosensing paper labels are used. The label tape 60 is set on the tape holder 18 and extended to be in contact with the thermal printing head 51.

Figure 5 shows the label printer in accordance with the present invention using the cassette 40. A carbon ribbon 41 pulled out from the cassette 40 and the label tape 60 are overlapped at the platen roller 34 to receive heat from the printing head 51 from the carbon ribbon 41 side.

The cassette 40 is adapted for lateral insertion with respect to the thermal printing head 50 as shown in Figure 5, and contains the winding reel 42 and the takeup reel 43 so that the carbon ribbon 41 is extended from the winding reel 42 and taken up by the takeup reel 43 after having contacted the thermal printing head 51.

For this purpose, as shown in Figure 6, a driving system 70 is provided in said casing 10 and has a reversible motor 71 housed in said electric circuit part 12 and two transmission systems which are driven by the motor 71. One of these transmission systems has a pulley 73 to drive a mounting spindle 72 for the takeup reel 43 of said carbon ribbon 41 and the other has a pulley 74 pivoted on the fixed shaft 31 to rotate said platen roller 34.

In this embodiment, a battery cell or rechargeable power pack is used as the power supply 21. Depending on the case, however, an external power supply such as, for example, commercial mains power can be used. In this case, the driving system 70 can be made in a different structure.

The label printer in accordance with the present invention can be used as the label adhering machine or the labeller. In this case, the label

tape 60 is fed intermittently.

In case the label printer according to the present invention is used only for printing labels, the label tape 60 can extend around the platen roller 34 as shown in Figure 8b and ejected out from an ejection port 301 of the tape depressing mechanism 30. In this case, the label tape 60 does not pass over the turnback pin 36 and the carrier strip 61 and labels 62 are ejected as a label tape 60 without being separated.

A number of marks (not shown) are printed on the rear of the carrier strip so that these marks are detected by the sensor 302 provided on the tape depressing mechanism 30 opposed to the thermal printing head unit 50, and accordingly the feeding of the label tape 60 may be controlled to control the position of each label 62 in reference to the thermal printing head 51.

Furthermore, if the label printer in accordance with the present invention is used also as a labeller, the label tape 60 is turned back at the turnback pin 36 and inserted between the platen roller 34 and the feed roller 35 as shown in Figure 8.

In this case, a label 62 is peeled from the carrier strip 61 as the label tape 60 is fed intermittently and forwarded onto a label receiving member 37 and protrudes from said label receiving member 37 as shown in Figure 4.

In this case, the label 62 is detected by a sensor 38 and the label tape will not be fed while the sensor 38 detects the presence of the label 62.

When a commodity is arranged close to the label receiving member 37 and moved up across the front of the label printer while being urged against a label 62 protruding from the label receiving member, a label is thus adhered to the commodity. The sensor 38 then detects the absence of a label 62 to actuate the electric circuit 20 whereby the printing head 51 performs again printing onto a label 62 on the label tape 60 and simultaneously the driving system 70 operates to protrude a further label 62 onto the label receiving member 37.

At this time, it is preferable to construct the platen roller 34 to reversely feed the label tape 60 prior to printing so as to return the leading label 62 back to the printing start position of the thermal printing head 51.

The reason for this is that, in this type of the labeller, the label 62 peeled from the carrier strip is held with its rear end 62' adhered to the carrier strip 61 as shown in Figure 9A to maintain the label 62 protruding.

Accordingly, the label 62' following this peeled label 62 is forwardly displaced from the printing position of the thermal printing head 51 and cannot be printed at this position.

Conventionally, therefore, the labels 62 on the label tape 60 have been adhered slightly separated

one from another on the carrier strip 62 to accommodate the gap g between the rear end 621 of said peeled label 62 and the printing position of the printing head 51 by a gap formed between labels 62 and 62', that is, a blank part where the carrier strip is exposed.

However, such method as described is disadvantageous in that it is necessary to form many blank parts on the label tape 60 and therefore the manufacturing process is complicated thus increasing cost, and the number of labels 62 which can be provided on one label tape 60 is substantially reduced, thus becoming economically wasteful.

In the label printer in accordance with the preferred embodiment, the label tape 60 is retracted back to the printing position, that is, to the centre line of the platen roller 34 prior to each printing operation, and such problem as described above is eliminated.

For this purpose, the printer according to the preferred embodiment is adapted so that the label tape 60 is fed slightly further even when the mark on the carrier strip 61 is detected by the sensor 302 and thus the leading label 62 is peeled from the carrier strip 61 and protruded. And also, when the sensor 38 detects the absence of the leading label 62, the motor 71 then reversely rotates to reversely feed the label tape 60 and, when the sensor 302 detects the respective mark on the carrier strip 61, the label tape 60 is stopped so that the position where the label tape 60 is reversely fed and stopped is the starting point for printing by the printing head 51 of the next label.

In the preferred embodiment, an input switch and a selector switch (not shown) are provided in the label printer. The electric circuit 20 is driven by the input switch and two types of operation modes as shown in Figures 8A and 8B are alternatively selected by the selector switch.

Moreover, if said label tape 60 is reversely fed by the motor 71, the label tape 60, or the label tape 60 and the carbon ribbon 41 are reversely fed to the rear side of the platen roller 34 and slackened. However, since the reverse feeding length of the label tape 60 is extremely short, the slackness of the label tape 60 will not hinder the operation of the label printer.

The above described label printer provides the advantage that, since the thermal printing head unit 50 and the tape depressing mechanism 30 of the label printer are respectively supported by the cantilever type fixed shafts 31, 54, the label tape 60 and, optionally, the carbon ribbon 41 can be easily laterally inserted between the platen roller 34 and the thermal printing head 51 i.e. without having to thread the tape longitudinally between the two. Since the tape depressing mechanism 30 is arranged to engage with the shaft 54 of the thermal

printing head unit 50, coupling of these two units can be firmly implemented in operation.

### Claims

1. A desk top label printer comprising a casing provided with a laterally openable cover 16 and having a tape holder 18 for holding a roll of label tape in an internal cavity of the casing, a thermal printing head unit 50 provided inside said casing 10 and having a thermal printing head 51, a tape depressing mechanism 30 which is arranged to oppose said thermal printing head unit 50 and has a platen roller 34 which comes in contact under pressure with said thermal printing head 51 as required, a driving means 73 which feeds a label tape inserted between said thermal printing head 51 and said platen roller, an electric circuit 20 which drives and controls said thermal printing head 51 and said driving means 74, and an input means for entering data to be printed by said thermal printing head unit 50 via said electric circuit, characterised in that the thermal printing head unit 50 is carried by a shaft 54 having one end supported by an internal wall of the casing and a free end extending toward said openable cover 16, said tape depressing mechanism 30 being provided with a support frame 32 pivotally carried by a fixed shaft 31 which extends in parallel with the shaft 54 of said thermal printing head unit 50 and which also has one end supported by an internal wall of the casing 10 and a free end, the platen roller 34 being carried by a displaceable part of the support frame 32, and said thermal printing head unit 50 and said tape depressing mechanism 30 are respectively provided with engaging means 33, 33' 55 and 55' for selectively interengaging said tape depressing mechanism 30 with the shaft 54 of said thermal printing head unit 50 in operation of the printer, wherein a space for laterally inserting said label tape, which space is open towards said cover, is defined between said thermal printing head 51 and said platen roller 34 by displacing said tape depressing mechanism 30 away from said thermal printing head unit 50, and wherein the tape depressing mechanism 30 is engaged with and fixed with respect to the support shaft 54 of said thermal printing head unit 50 by said engaging means when said platen roller 34 depresses a label against said thermal printing head 51 in use.

2. A desk top label printer in accordance with Claim 1, wherein said engaging means comprises a pair of engaging parts 55 and 55' provided on the shaft 54 of said thermal printing head 51 which are respectively positioned on both sides of said

thermal printing head 51, and a pair of complementary engaging cutaway parts 33 and 33' provided on the support frame 32 of said tape depressing mechanism 30 which respectively oppose said engaging parts 55 and 55', each of said engaging parts 55 and 55' being formed to have a cross-section substantially of a partly flattened circle and said engaging cutaway parts 33 and 33' are each formed by a recess 331 which is open at a side facing said engaging parts 55 and 55' and a rounded hole 332 which is enlarged with respect to the recess 331, the width of said recess 331 being greater than the flattened thickness (t), of the engaging parts 55 and 55', and the diameter of said rounded hole 332 being substantially the same as the maximum diameter (d) of said engaging parts 55 and 55', wherein each of said engaging parts can be simultaneously turned in the rounded holes 332 of said engaging cutaway parts 33 and 33' by a knob 56 provided on said shaft 54 to allow operation from outside the casing.

3. A desk top label printer in accordance with claim 1 or 2, wherein a cassette storing space 16 is formed in an internal space of said casing 10 and a cassette 40 containing a thermal printing carbon ribbon 41 can be inserted from a lateral side to be remountable inside said space 17, said cassette being adapted so that said carbon ribbon 41 is inserted between the thermal printing head 51 and the platen roller 34 with said thermal printing head 51 being accommodated in the cassette.

4. A desk top label printer in accordance with claim 3, wherein the carbon ribbon 41 of said cassette 40 is wound into a roll, mounted on a winding reel 42 in the cassette 40 and taken up by a takeup reel 43 in the cassette after having passed through said thermal printing head 51, and said label tape 60 is fed by rotation of the platen roller 34, and said takeup reel 43 and said platen roller 34 are driven by the same driving mechanism 70.

5. A desk top label printer in accordance with any preceding claim wherein an input means for said electric circuit 20 comprises a set of keyboard switches 14 and said electric circuit includes a microprocessor.

6. A desk top label printer in accordance with claim 5 wherein a ROM card 22 which is detachably mounted within the casing 10 is used to control said electric circuit 20.

7. A desk top label printer in accordance with claim 5, wherein a RAM card which is detachably mounted within the casing 10 is used to control said electric circuit 20.

8. A desk top label printer in accordance with any preceding claim wherein said tape depressing mechanism 30 is provided with a turn back pin 36, which turns back the carrier strip 6 of the label tape

60, at a label tape ejection side of said platen roller 34.

9. A desk top label printer in accordance with claim 8, wherein, when said label tape 60 is used in a mode where its carrier strip 60 is turned back by the turn back pin 36, said electric circuit 20 is changed over to a labelling mode and, after a label 62 of said label tape 60 has been adhered onto an article of goods, said platen roller 34 is reversed by a specified angle to reversely feed the label tape 60 by a small predetermined distance.

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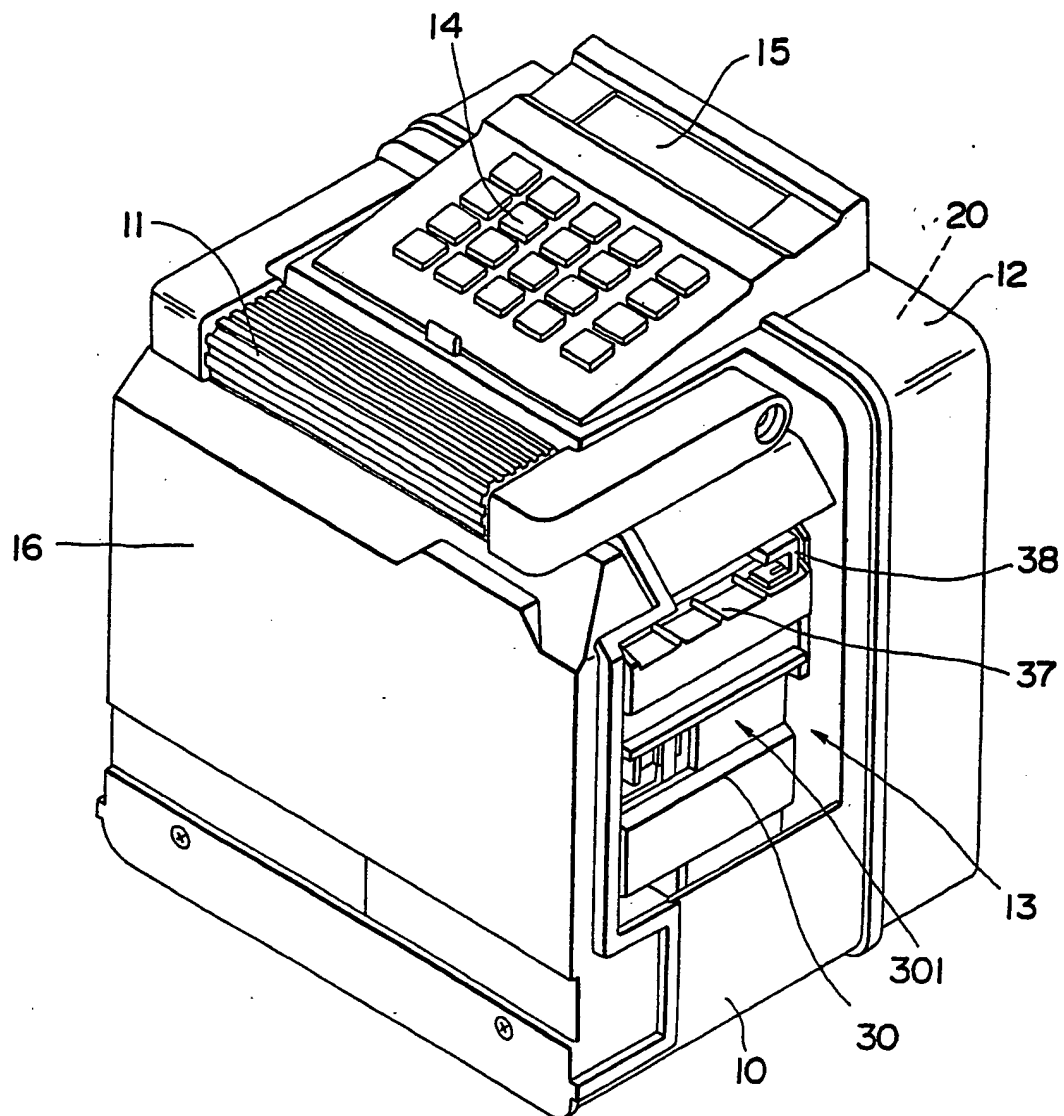
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FIG. 1



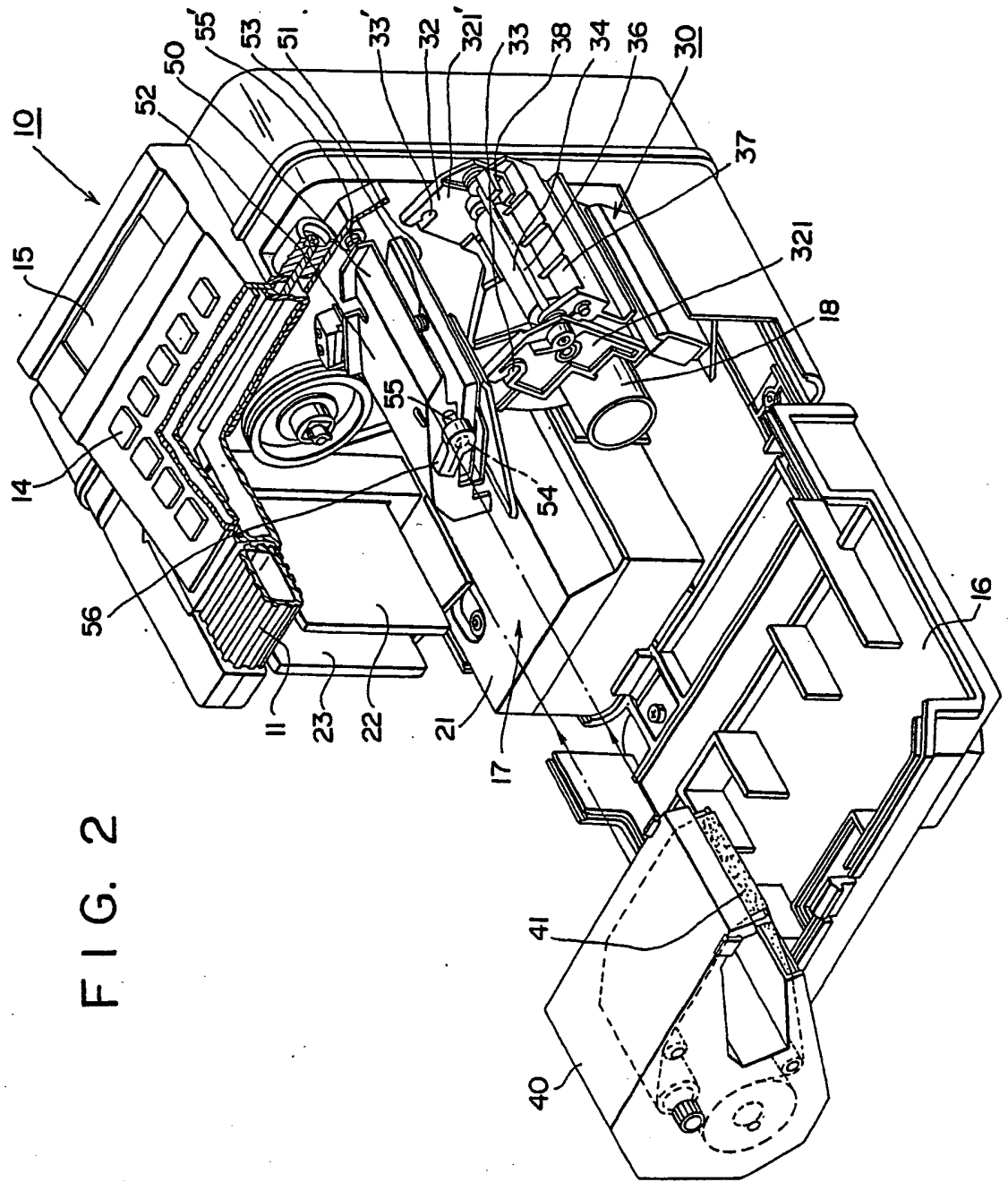


FIG. 2

FIG. 3

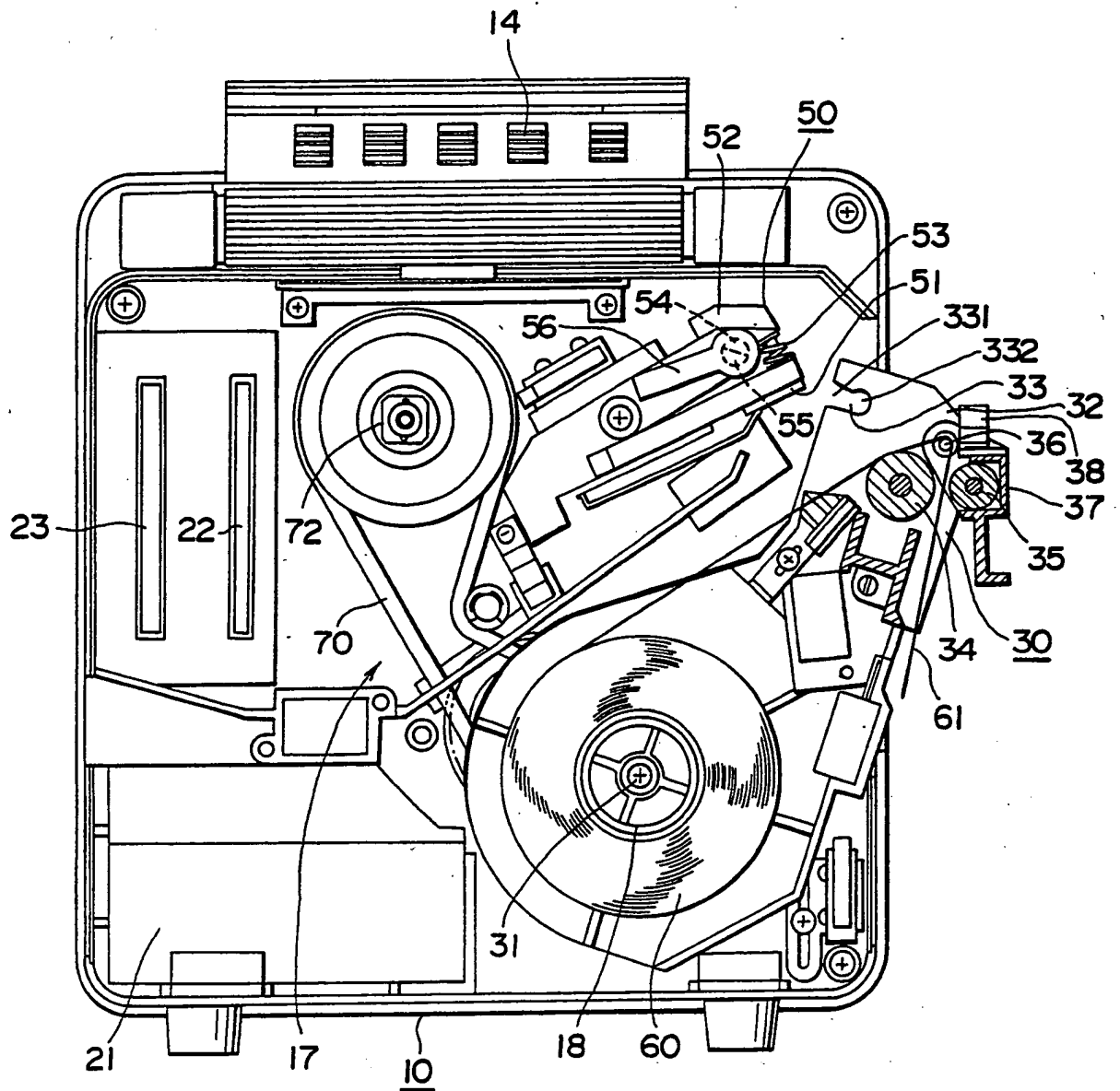


FIG. 4

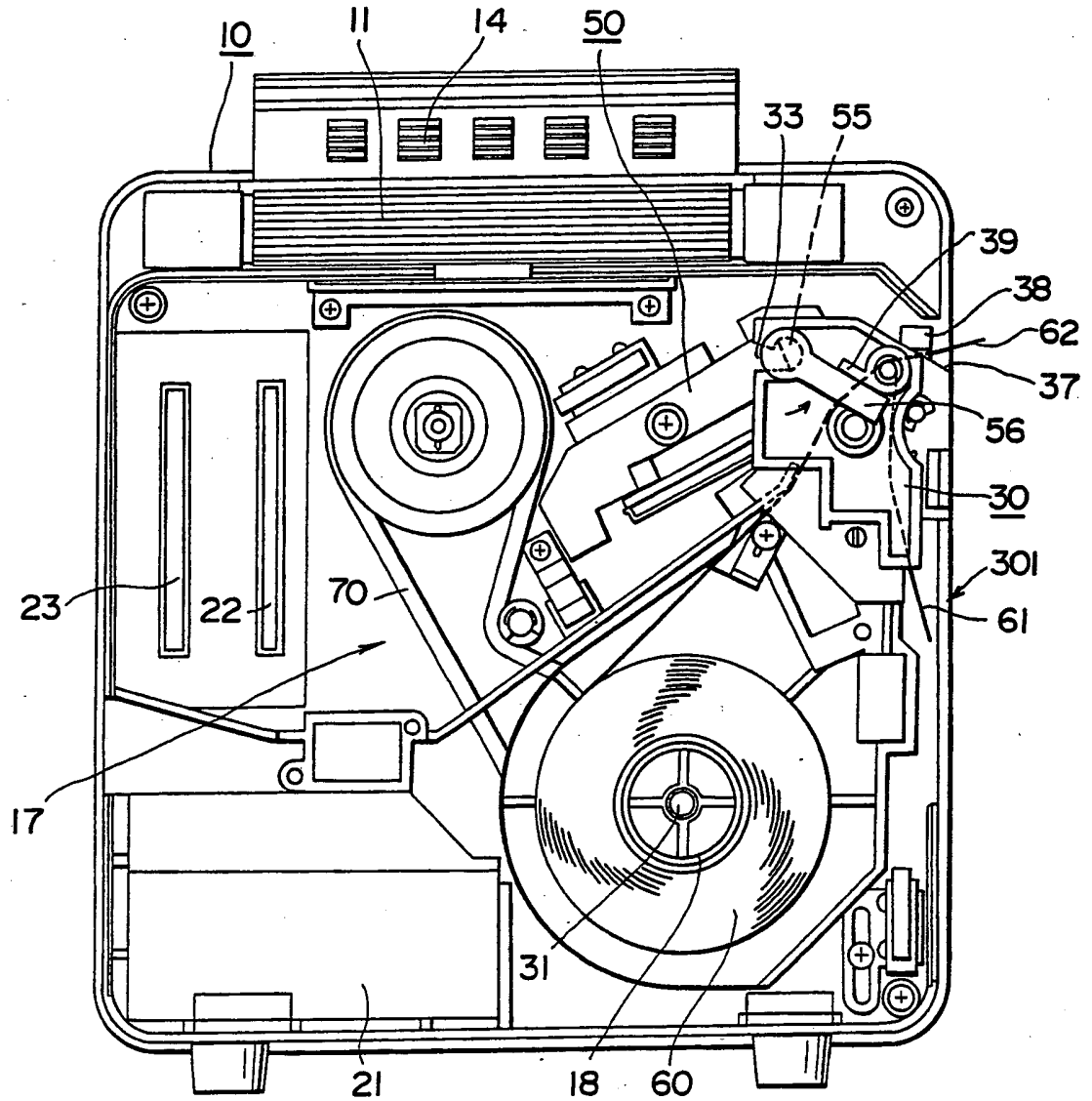


FIG. 5

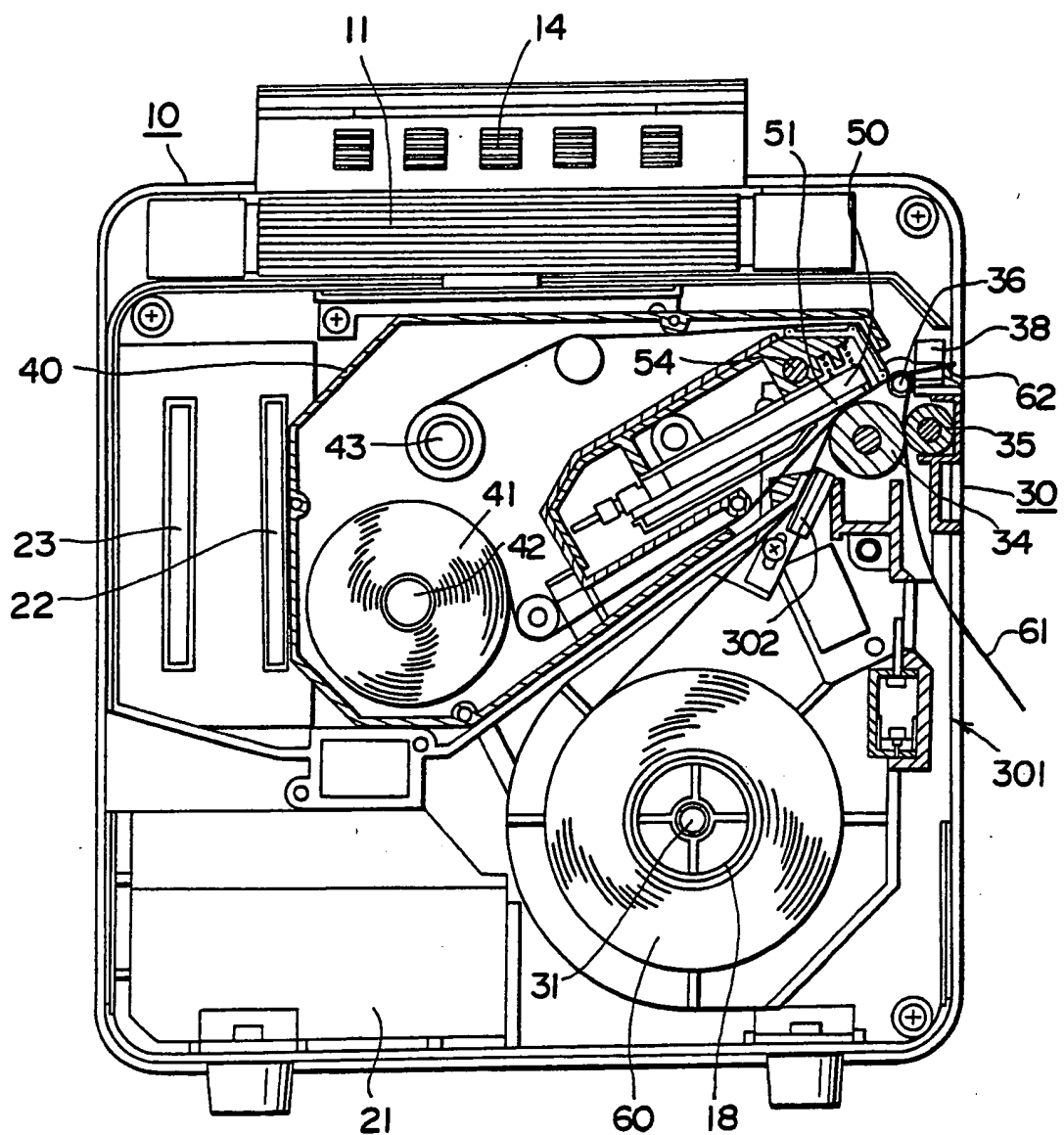


FIG. 6

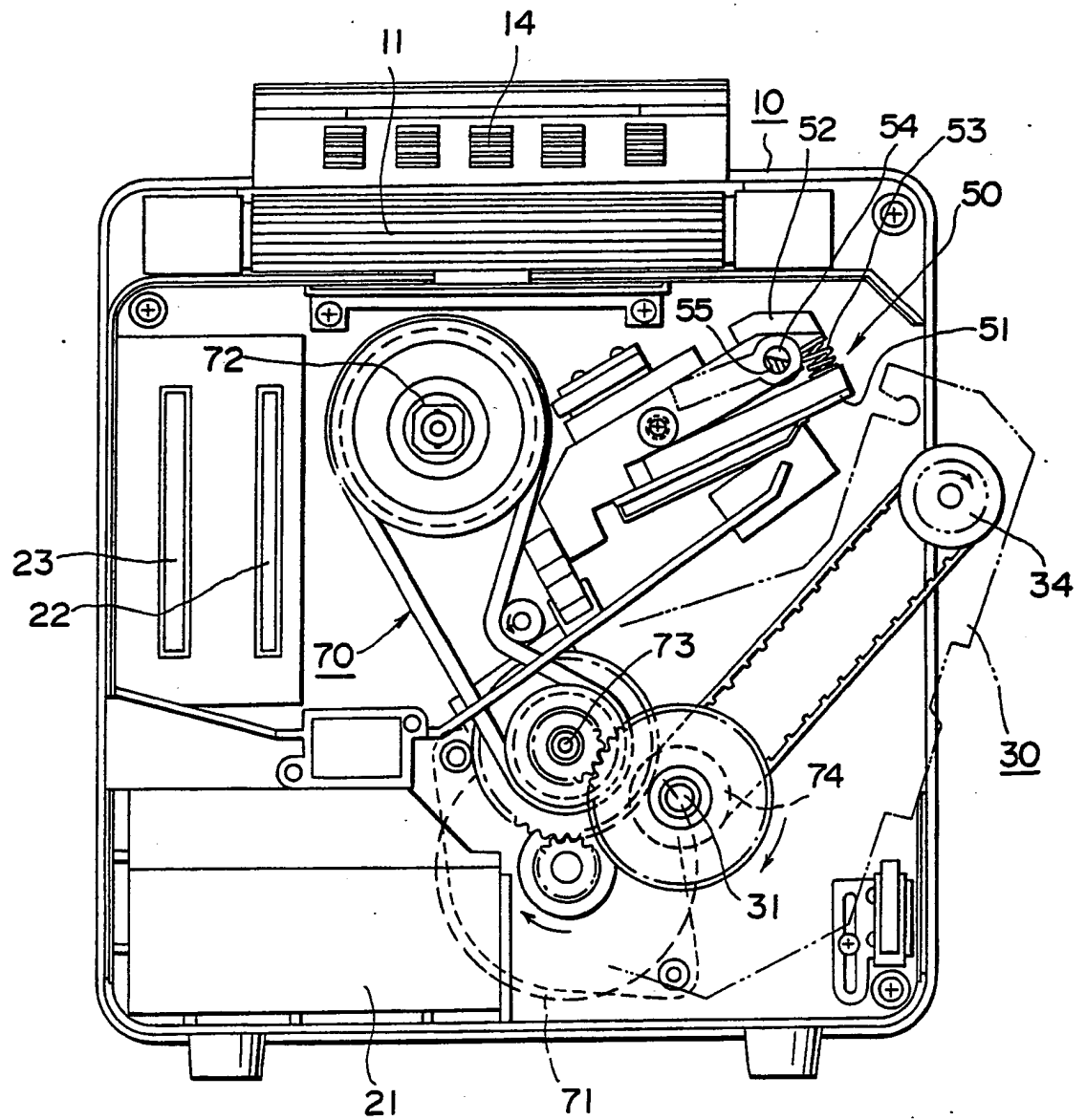


FIG. 7A

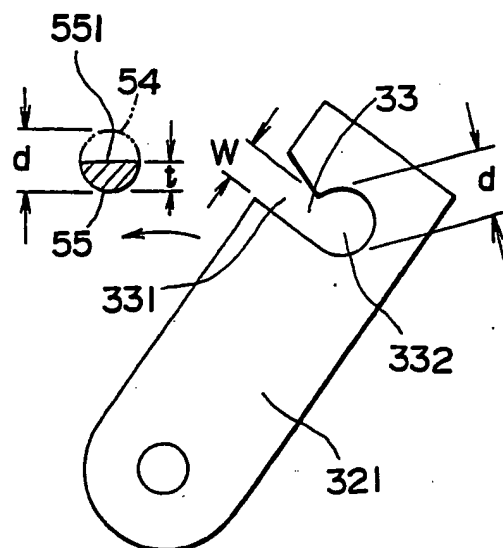


FIG. 7B

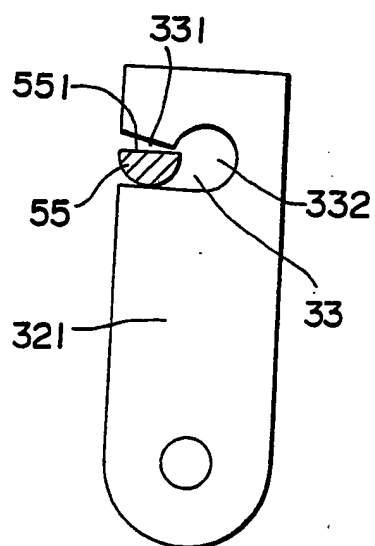


FIG. 7C

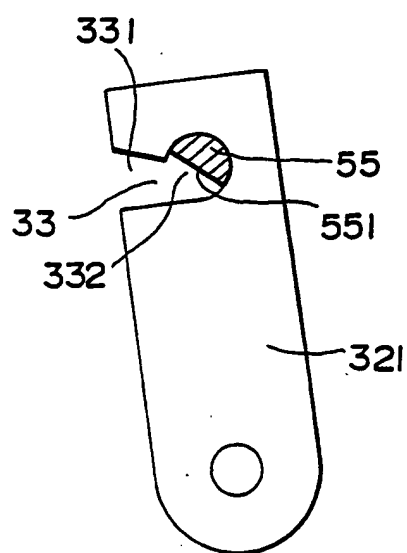


FIG. 8A

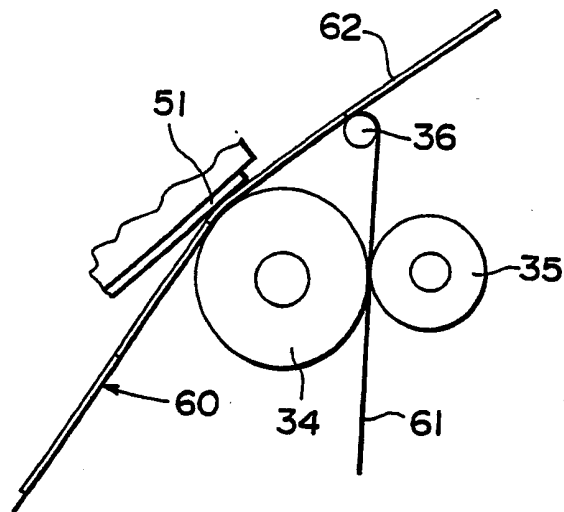


FIG. 8B

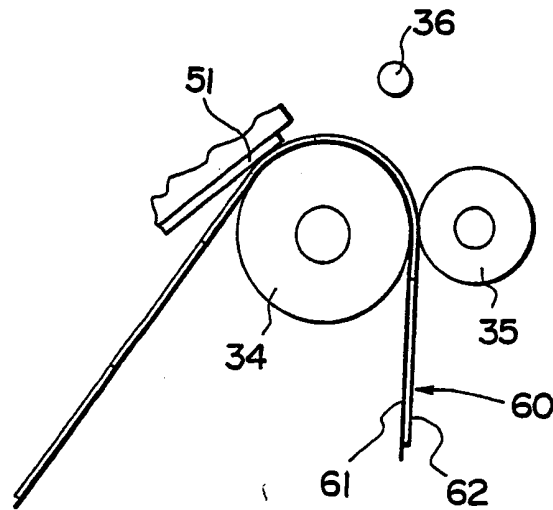




FIG. 9A

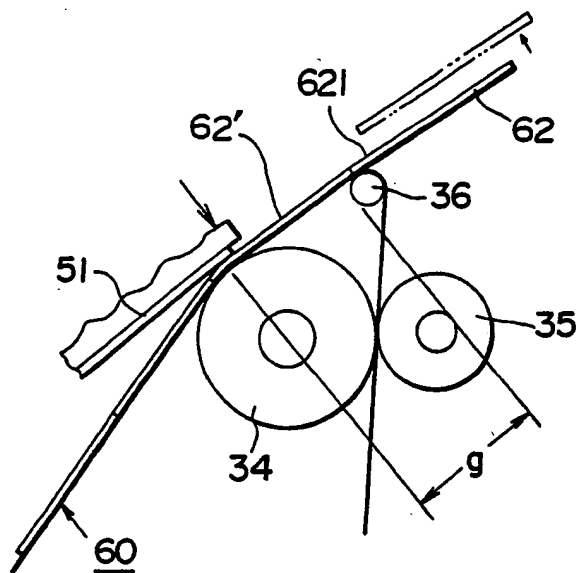
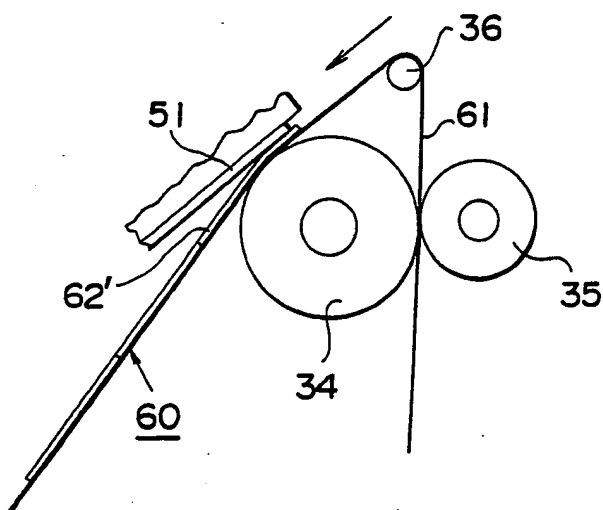
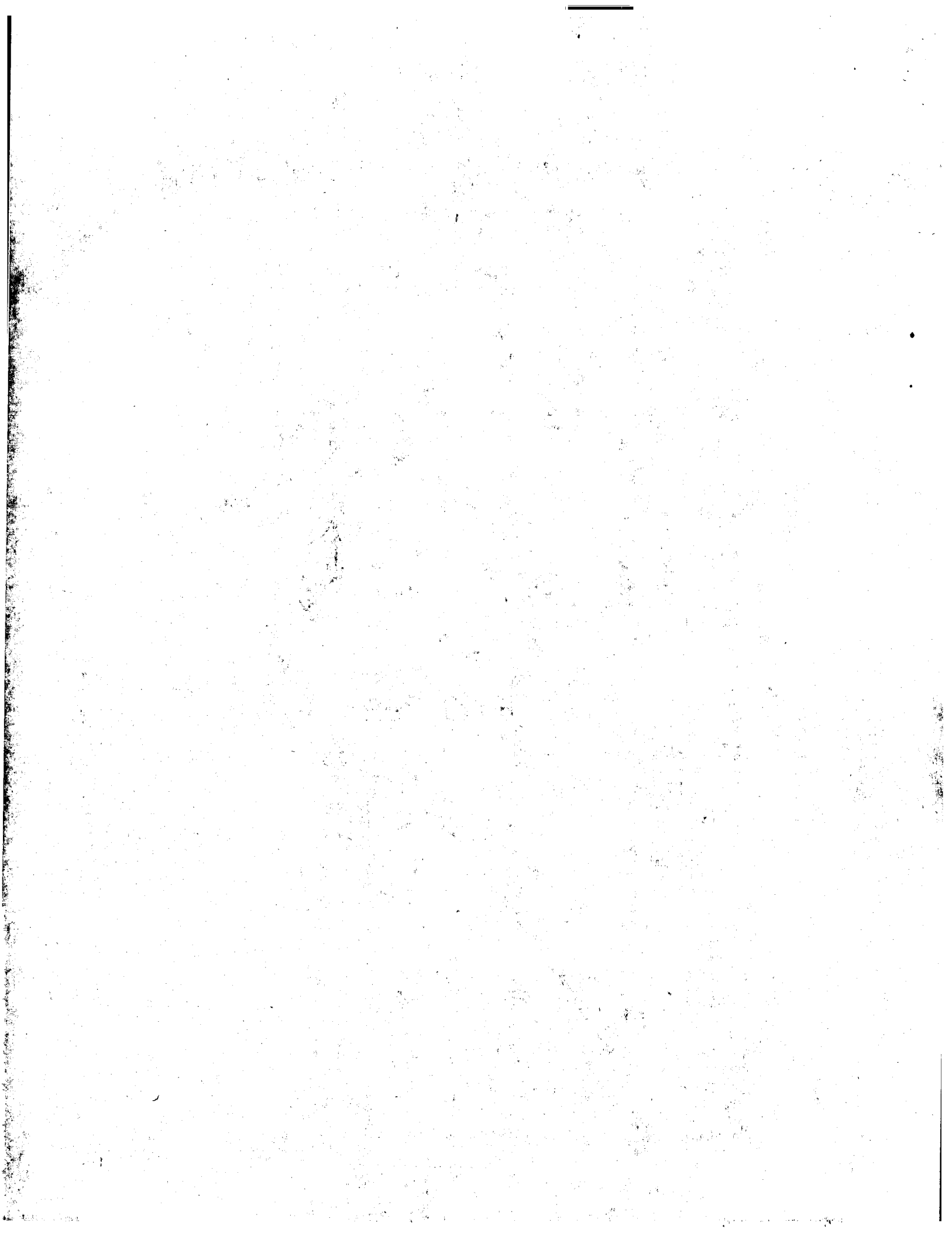


FIG. 9B







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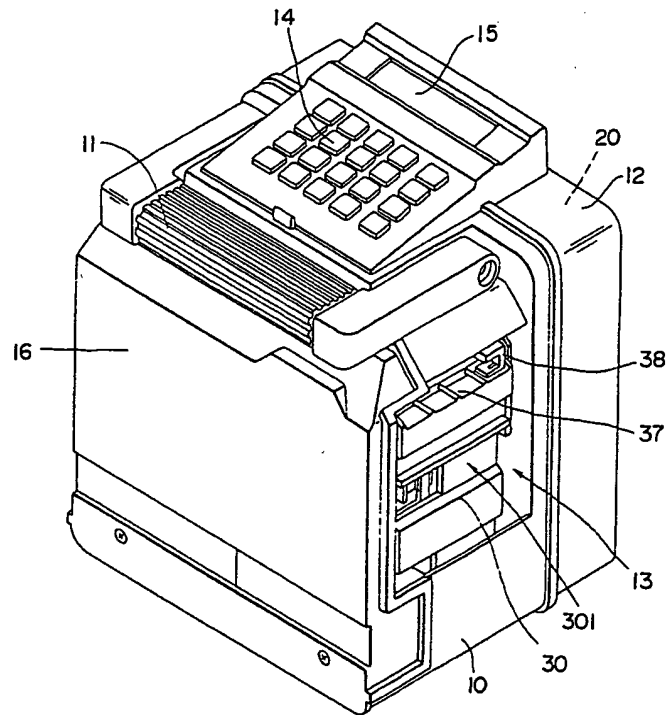
(54) Desk top label printer.

(57) A desk top label printer comprising a casing provided with a laterally openable cover 16 and having a tape holder 18 for holding a roll of label tape in an internal cavity of the casing, a thermal printing head unit 50 provided inside said casing 10 and having a thermal printing head 51, a tape depressing mechanism 30 which is arranged to oppose said thermal printing head unit 50 and has a platen roller 34 which comes in contact under pressure with said thermal printing head 51 as required, a driving means 73 which feeds a label tape inserted between said thermal printing head 51 and said platen roller,

an electric circuit 20 which drives and controls said thermal printing head 51 and said driving means 74, and  
an input means for entering data to be printed by said thermal printing head unit 50 via said electric circuit, characterised in that the thermal printing head unit 50 is carried by a shaft 54 having one end supported by an internal wall of the casing and a free end extending toward said openable cover 16, said tape depressing mechanism 30 being provided with a support frame 32 pivotally carried by a fixed shaft 31 which extends in parallel with the shaft 54 of said thermal printing head unit 50 and which also

has one end supported by an internal wall of the casing 10 and a free end, the platen roller 34 being carried by a displaceable part of the support frame 32, and said thermal printing head unit 50 and said tape depressing mechanism 30 are respectively provided with engaging means 33, 33' 55 and 55' for selectively interengaging said tape depressing mechanism 30 with the shaft 54 of said thermal printing head unit 50 in operation of the printer, wherein a space for laterally inserting said label tape, which space is open towards said cover, is defined between said thermal printing head 51 and said platen roller 34 by displacing said tape depressing mechanism 30 away from said thermal printing head unit 50, and wherein the tape depressing mechanism 30 is engaged with and fixed with respect to the support shaft 54 of said thermal printing head unit 50 by said engaging means when said platen roller 34 depresses a label against said thermal printing head 51 in use.

FIG. 1





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# EUROPEAN SEARCH REPORT

Application number

EP 89 30 8838

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl. 4)
X	EP-A-0 120 455 (K.K. ISHIDA KOKI SEISAKUSHO)  * Page 3, lines 10-13; page 4, line 22 - page 5, line 7; page 6, last paragraph; page 7, lines 17-24; page 8, two first paragraphs; page 10, last paragraph; page 11, lines 6-16; figures 2,3 *	1	B 65 C 11/02
Y	--	5-7	
Y	US-A-4 262 591 (R.C. COOK)  * Column 2, lines 37-42; column 3, line 66 - column 4, line 1; column 4, lines 22-30; claim 1; figures 1,6 *	5-7	
P,A	EP-A-0 297 568 (TOKYO ELECTRIC CO LTD.)  * The whole document *	1,5,7	TECHNICAL FIELDS SEARCHED (Int. Cl. 4)  B 65 C B 41 J G 01 G G 06 K
The present search report has been drawn up for the following reasons: XXXX			
Place of search The Hague		Date of completion of the search 23-11-1989	Examiner VAN DEN BOSSCHE
CATEGORY OF CITED DOCUMENTS		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	
X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document			

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### CLAIMS INCURRING FEES

The present European patent application comprised at the time of filing more than ten claims.

- ☐ All claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for all claims.
- ☐ Only part of the claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims and for those claims for which claims fees have been paid.
- namely claims:
- ☐ No claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims.

### X LACK OF UNITY OF INVENTION

The Search Division considers that the present European patent application does not comply with the requirement of unity of invention and relates to several inventions or groups of inventions.

namely:

See sheet B

- ☐ All further search fees have been paid within the fixed time limit. The present European search report has been drawn up for all claims.
- ☐ Only part of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the inventions in respect of which search fees have been paid.
- namely claims:
- ☒ None of the further search fees has been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims.
- namely claims: 1, 2, 5-7



### LACK OF UNITY OF INVENTION

The Search Division considers that the present European patent application does not comply with the requirement of unity of invention and relates to several inventions or groups of inventions, namely:

1. Claims 1,2,5-7: Label printer openable by the side with special tape depressing mechanism
2. Claims 1,3,4,5-7: Label printer openable by the side with a cassette for carbon ribbon
3. Claims 1,5-7,8,9: Label printer openable by side with a turn back pin

N.B.

The subject matter of claim 1, which deals principally with a label printer openable by the side, being anticipated (lack of novelty, see EP 120 455), claim 1 has to be considered as the preamble for claims 2,3,5 and 8, which become independent. The subject matters developed in the sets of claims depending from the aforementioned claims solve 4 different problems, which are:

- 1.(claim 2): easing the setting of a thermosensing label strip in a label printer
2. (claims 3 and 4): easing the exchange of a carbon ribbon cassette in a label printer when the label used is not thermosensing
- 3.(claims 5-7): control of a label printer
- 4.(claims 8,9): using a label printer as a labelling machine.

The subject matter developed in claims 5-7 can be included in the three other sets of claims, because it is considered as a usual part of such a label printer and therefore could not be considered as a different subject matter on its own. But the 3 other problems ~~(1,2 and 4)~~ have no functional relations in between. So, these sets of claims should be considered as containing 3 different inventions dealing with 3 different inventive concepts.

